

CLAIMS

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1. A motor-driven window regulator mechanism for sliding a window unit of an automotive vehicle horizontally between open and closed positions, characterized in that
5 the window regulator mechanism is operative to pull the window from its closed to its open position and operative to pull the window from its open to its closed position.

2. A window regulator mechanism according to claim 1 including:

10 linear actuation means secured to the window and movable in a first direction to pull the window toward the open position and movable in a second direction to pull the window toward the closed position; and

drive means to selectively move the linear
15 actuation means in the first and second directions.

3. A window regulator mechanism according to claim 2 wherein:

the linear actuation means is secured to a first side of the window to pull the window in the first
20 direction and secured to an opposite side of the window to pull the window in the second direction.

4. A window regulator mechanism according to claim 3 wherein:

the drive means includes a motor and a drum
25 driven by the motor; and

the linear actuation means includes a first cable length secured at one end thereof to the first side of the window and wound at its other end around the drum in a clockwise direction, and a second cable length secured at one end thereof to the opposite side of the window and wound at its other end around the drum in a counter-clockwise direction.

5. A window regulator mechanism according to claim 4 wherein:

10 the window unit is supported for sliding movement by an upper and a lower guide means;

a first cable guide fitting is positioned proximate the lower guide means and proximate the location of the first side of the window when the window is in the open position;

a second cable guide fitting is positioned proximate the lower guide means and proximate the location of the opposite side of the window when the window is in the closed position; and

20 the first and second cable guide fittings receive the first and second cable lengths respectively and guide the cable lengths between the window and the drum.

6. The mechanism of claim 5 wherein the first and second cable lengths each comprise a Bowden-type cable having a core wire and a conduit.

7. The mechanism of claim 4 wherein the motor has an operating speed of at least about 4500 revolutions per minute and has a normal operating current draw of less than approximately two amperes, and the motor drives the drum by means of a gear train providing a reduction ratio in excess of about 500 to 1.

8. The mechanism of claim 4 wherein the motor and the drum are secured to the lower guide means.

9. The mechanism of claim 4 wherein the motor and the drum are secured to a portion of the automotive vehicle remote from the window unit and guide means.

10. A window regulator mechanism for moving a window of an automotive vehicle between an open and a closed position, the window supported along top and bottom edges by substantially horizontal and mutually parallel upper and lower guide rails and slidable therealong between the open and closed positions, the regulator comprising:

a drive unit comprising a reversible electric motor, and a cable drive drum driven by the motor;

a first cable attached at a first end to a first side of the window and attached at a second end to the cable drive drum;

a first cable guide proximate the lower guide rail and proximate the location of the first side of the window when the window is in the open position, the first

cable guide receiving the first cable and guiding the first cable between the window and the drum;

5 a first flexible conduit fixed at a first end to the first cable guide and at a second end to the drive unit adjacent the drum and enclosing the portion of the first cable running therebetween;

a second cable attached at a first end to an opposite side of the window and attached at a second end to the cable drive drum;

10 a second cable guide proximate the lower guide rail and proximate the location of the opposite side of the window when the window is in the closed position, the second cable guide receiving the second cable and guiding the second cable between the window and the drum;

15 a second flexible conduit fixed at a first end to the second cable guide and at a second end to the drive unit adjacent the drum and enclosing the portion of the second cable running therebetween; whereby

20 rotation of the cable drive drum in a first direction tensions the first cable to slide the window toward the open position and rotation of the cable drive drum in a second direction tensions the second cable to slide the window toward the closed position.